1) Write a lambda expression to get the product of two numbers.

Run test for expression(5,6)

Output : 30

In [165…

```
multiplier = lambda num1,num2: num1*num2
multiplier(5,6)
```

Out[165]:

```
30
```

2) Write a function to get the area of a circle from the radius. Hint: remember to import the right module for being able to calculate the area of the circle.

Run test for function(10)

Output: 314.1592653589793

In [166…

```
from math import pi
radius = int(input("Input your radius here: "))
radius = pi * (radius**2)
print("The area of this circle is:", radius)
```

```
Input your radius here: 10
The area of this circle is: 314.1592653589793
```

3) Build a simple calculator which can: add, subtract, multiply, divide.

Hint: solve by writing a function that takes as argument two numbers and the operation and returns the desired output.

Run test for function(2,5,'d')

Output: 0.4

In [167…

```
def simple_calculator(firstNum, secondNum, operation):

    # 4 operations for this one, order of input of firstNum & secondNum matters
    divide = firstNum / secondNum
    multiply = firstNum * secondNum
    add = firstNum + secondNum
    subtract = firstNum - secondNum

    if operation == 'd':
        return divide
    elif operation == 'm':
        return multiply
    elif operation == 'a':
        return add
    elif operation == 's':
        return subtract
    else:
        print("Invalid input, please recheck your arguments. The following operations are accepted: 'd','s','m','a'.")


simple_calculator(2,5,'d')
```

Out[167]:

```
0.4
```

4) Define a class named Rectangle which can be constructed by a length and width. The Rectangle class has a method which can compute the area.

Run test for

```
r = Rectangle(5,10)
r.area()
```

Output: 50

In [168…

```
class Rectangle():
    def __init__(self, length, width):
        self.l = length
        self.w = width

    def area (self):
        return(self.l * self.w)

# Now we will run test for 5,10
r = Rectangle(5,10)
r.area()
```

```
Out[168]: 50
```

5) Define a class named Shape and its subclass Square.

Shape objects can be constructed by name and length has an area function which return 0

Square subclass has an init function which take a length and name as argument and has an area method and a describe method what prints the name of the Shape.

Print the area from Square class.

Run test for:

```
s = Square('square',5)
print(s.area())
print(s.describe())
```

Output: The area is:

```
      25

 This is a: square
```

```
In [169…
class Shape():
    def __init__(self, name, length):
        self.n = name
        self.l = length
    def area (self):
        area = 0
        return area

class Square(Shape):
    def __init__(self, name, length):
        self.n = name
        self.l = length


    def area (self):
        area = self.l ** 2
        return area


    def describe(self):
        describe = self.n

        if describe == 'square':
            return describe
        else:
            print("You are not declaring a square input correctly, so you cannot use a Square subclass.")

# print test now
s = Square('square',5)
print("The area is: \n")
print(s.area(), "\n")
print("This is a: ", s.describe())
```

```
The area is: 

25 

This is a:  square
```